

AMENDMENT UNDER 37 C.F.R. §1.111
U.S. Appln. No. 09/361,118

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A process for producing a polycrystalline alumina sintered body which includes the steps of: subjecting alumina powder to ultrasonic irradiation, mechanical stirring not using a grinding medium, or ultrasonic irradiation and mechanical stirring not using a grinding medium, resulting in slurry dispersed in a solvent; drying and forming the slurry to produce a green body; and then sintering the green body in an air atmosphere at a temperature in the range of 1400 °C to 1800 °C; wherein the alumina powder has: a purity of 99.99 wt% or more and includes α alumina particles having polyhedral shape, having substantially no fractured surface and a D/H ratio of from 0.5 or more to 3.0 or less; the number-average particle size of from 0.1 μm or more to 1.0 μm or less; and a D90/D10 ratio of 7 or less.